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VIDYAVIHAR

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```
1 #include <stdbool.h>
2 #include <stdio.h>
3 #define MAX 5
4 int QUEUE[MAX], REAR = -1, FRONT = -1;
5 void insertRear();
6 void deleteFront();
7 void deleteRear();
8 void insertFront();
9 void display();
10 bool isFull();
11 bool isEmpty();
12 int main() {
13     int choice;
14     printf("Menu:\n 1. Insert from Rear\n 2. Delete from Front\n 3. "
15     "Insert from Front\n 4. Delete from Rear\n 5. Display\n 6. Exit\n");
16     while (true) {
17         printf("\nEnter choice: ");
18         scanf("%d", &choice);
19         switch (choice) {
20             case 1:
21                 insertRear();
22                 break;
23             case 2:
24                 deleteFront();
25                 break;
26             case 3:
27                 insertFront();
28                 break;
29             case 4:
30                 deleteRear();
31                 break;
32             case 5:
33                 display();
34                 break;
35             case 6:
36                 printf("Exiting...\n");
37                 return 0;
38             default:
39                 printf("Invalid choice");
40                 break;
41         }
42     }
43 }
```

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43 return 0;
44 }
45 bool isFull() { return REAR == MAX-1; }
46 bool isEmpty() { return FRONT < 0; }
47 void insertRear() {
48 int a;
49 if (!isFull()) {
50 printf("Queue is full");
51 }
52 }
53 if (FRONT == -1)
54 FRONT++;
55 printf("Enter Element: ");
56 scanf("%d", &a);
57 QUEUE[++REAR] = a;
58 }
59 void deleteFront() {
60 int value;
61 if (!isEmpty()) {
62 printf("Queue Empty");
63 return;
64 }
65 value = QUEUE[FRONT];
66 if (REAR == FRONT)
67 FRONT=REAR--1;
68 else
69 FRONT++;
70 printf("The deleted element from front is: %d", value);
71 }
72 void deleteRear() {
73 int value;
74 if (!isEmpty()) {
75 printf("Queue Empty");
76 return;
77 }
78 value = QUEUE[REAR];
79 if (REAR == FRONT)
80 FRONT=REAR--1;
81 else
82 REAR--;
83 printf("The deleted element from rear is: %d", value);
84 }

```

```

87 FRONT=REAR--1;
88 else
89 FRONT++;
90 printf("The deleted element from front is: %d", value);
91 }
92 void deleteRear() {
93 int value;
94 if (!isEmpty()) {
95 printf("Queue Empty");
96 return;
97 }
98 value = QUEUE[REAR];
99 if (REAR == FRONT)
100 FRONT=REAR--1;
101 else
102 REAR--;
103 printf("The deleted element from rear is: %d", value);
104 }
105 void insertFront() {
106 if (FRONT == 0) {
107 printf("Front is at the beginning- insertion not possible");
108 return;
109 }
110 if (FRONT == -1) {
111 FRONT++;
112 REAR++;
113 } else
114 FRONT--;
115 int x;
116 printf("Enter Element: ");
117 scanf("%d", &x);
118 QUEUE[FRONT] = x;
119 }
120 void display() {
121 if (!isEmpty()) {
122 printf("Queue Empty");
123 return;
124 }
125 printf("Printing DeQueue:\n");
126 for (int i = FRONT; i <= REAR; i++)
127 printf("%d", QUEUE[i]);
128 }

```



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OUTPUT:

```
adminit@a00-G7-Microtower-PC:~$ ./a.out
Menu:
 1. Insert from Rear
 2. Delete from Front
 3. Insert from Front
 4. Delete from Rear
 5. Display
 6. Exit

Enter choice: 1
Enter Element: 45

Enter choice: 1
Enter Element: 32

Enter choice: 126
Invalid choice
Enter choice: 1
Enter Element: 12

Enter choice: 5
Printing DeQueue:
      45      32      12
Enter choice: 4
The deleted element from rear is: 12
Enter choice: 5
Printing DeQueue:
      45      32
Enter choice: █
```

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